CLAIMS

1. A method for determining the power required to transmit data via one or more of a set of communication links in a wireless communications system, the method comprising the steps of:

determining a base power level of a communication link at a first data transfer rate;

adjusting the base power level of a communication link at the first data transfer rate to a second power level for a second data transfer rate for providing an approximately proportional power level at the second data transfer rate;

adjusting the second power level by an active leg adjustment to provide an acceptable signal strength for the number of communication links in the set of communication links; and

modifying the second power level by a frame error correction value to provide an acceptable signal strength at a transmission frame error rate.

2. The method in claim 1, wherein the first data transfer rate is the data transfer rate of a fundamental channel (FCH).

3. The method in claim 2, wherein the base power level is the power required for transferring data on the fundamental channel (FCH).

4. The method in claim 2, wherein the base power level is a value spatially representing the power required

for the first data transfer on the fundamental channel (FCH).

5. The method in claim 1, wherein the adjustment of the base power level at the first data transfer rate to a second power level at a second data transfer rate is the ratio of the second data transfer rate to the first data transfer rate converted to decibels.

6. The method in claim 1, wherein the step of adjusting the second power level by the active leg adjustment varies in magnitude as a function of the number of communication links in a set of communication links for the first data transfer rate and the second data transfer rate.

7. The method in claim 6, wherein the first data transfer rate is the data transfer rate of a fundamental channel; and wherein the second data transfer rate is the data transfer rate of a supplemental channel.

8. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the magnitude of the active leg adjustment decreases as the fundamental channel comprises fewer communication links.

9. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the magnitude of the active leg adjustment increases as the supplemental channel comprises fewer communication links.

10. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises between about 1 and 6 communication links, the supplemental channel comprises between about 1 and 6 communication links, and the magnitude of the active leg adjustment is between about 0.0 decibels and 5.0 decibels.

11. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 1 communication link and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

12. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 2 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 3.0 decibels.

13. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 3 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg

adjustment comprises adjusting the second power level approximately 5.0 decibels.

14. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 5.0 decibels.

15. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 5.0 decibels.

16. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 5.0 decibels.

17. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 2

communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

18. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 3 communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 1.8 decibels.

19. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 1.8 decibels.

20. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 1.8 decibels.

21. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 1.8 decibels.

22. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 3 communication links and the supplemental channel comprises at least 3 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

23. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 3 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

24. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 3 communication links; and wherein the step of

adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

25. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 3 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

26. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 4 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

27. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 4 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

28. The method in claim 7, wherein the step of adjusting the second power level by the active leg

adjustment, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 4 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

29. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 5 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

30. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 5 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

31. The method in claim 7, wherein the step of adjusting the second power level by the active leg adjustment, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 6 communication links; and wherein the step of adjusting the second power level by the active leg adjustment comprises adjusting the second power level approximately 0.0 decibels.

32. The method in claim 1, wherein the modification of the second power level by the frame error correction value is a function of:

$$\text{Frame Error Correction Value} = \text{FER Correction Slope} * \log_{10}(FER_{SCH}/FER_{FCH})$$

wherein the FER Correction Slope is a factor to be applied to the ratio of a supplemental frame error rate to a fundamental frame error rate converted to decibels; and

wherein the term $\log_{10}(FER_{SCH}/FER_{FCH})$ is the ratio of the supplemental frame error rate to the fundamental frame error rate.

33. The method in claim 32, wherein the FER Correction Slope is approximately -3.3.

34. The method in claim 32, wherein the supplemental frame error rate is a forward supplemental channel frame error rate.

35. The method in claim 32, wherein the fundamental frame error rate is the forward fundamental channel frame error rate.

36. The method in claim 1, further comprising adjusting the second power level by an error code correction adjustment at least partially offsetting a gain achieved by a frame error correction method designed into the wireless communications system.

37. The method in claim 33, wherein the frame error correction method comprises use of a convolutional code and wherein the error code correction adjustment comprises approximately 0.0 decibels.

38. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 19.2 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.6 decibels.

39. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 38.4 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.0 decibels.

40. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 76.8 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.2 decibels.

41. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 153.6 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.4 decibels.

42. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 19.2 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.1 decibels.

43. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 38.4 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.5 decibels.

44. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 76.8 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.8 decibels.

45. The method in claim 33, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 153.6 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.1 decibels.

46. The method in claim 1, further comprising adjusting the second power level by a power control adjustment at least partially offsetting a difference in a first power control of the first data transfer rate and a second power control of the second data transfer rate.

47. The method in claim 46, wherein the first data transfer rate is the data transfer rate of a fundamental channel; wherein the second data transfer rate is the data transfer rate of a supplemental channel; and wherein the power control correction adjustment comprises approximately -1.0 dB.

48. The method in claim 1, wherein the communication links are adjusted to operate over substantially the same spread spectrum.

49. The method in claim 48, wherein the communication links transfer data in a CDMA system.

50. A method for determining a $\Delta E_b/N_0$ value of one or more communications links in a set of communication links between a first target E_b/N_0 value of a first data transfer at a first data transfer rate and a desired target E_b/N_0 value of a second data transfer at a second data transfer rate, the method comprising the steps of:

determining a base $\Delta E_b/N_0$ value as an active leg value to provide an acceptable signal strength for the number of communication links in a set of communication links; and

adjusting the base $\Delta E_b/N_0$ value by a frame error correction value to provide an acceptable signal strength at a transmission frame error rate.

51. The method in claim 50, wherein the step of determining the base $\Delta E_b/N_0$ value varies in magnitude as a function of the number of communication links in the set of communication links for a first data transfer rate and a second data transfer rate.

52. The method in claim 51, wherein the first data transfer rate is the data transfer rate of a fundamental channel; and wherein the second data transfer rate is the data transfer rate of a supplemental channel.

53. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the magnitude of the active leg value decreases as the fundamental channel comprises fewer communication links.

54. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the magnitude of the active leg value increases as the supplemental channel comprises fewer communication links.

55. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises between about 1 and 6 communication links, the supplemental channel comprises between about 1 and 6 communication links, and the magnitude of the active leg value is between about 0.0 decibels and 5.0 decibels.

56. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 1 communication link and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

57. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 2 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 3.0 decibels.

58. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 3 communication links and the

supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 5.0 decibels.

59. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 5.0 decibels.

60. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 5.0 decibels.

61. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 1 communication link; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 5.0 decibels.

62. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 2 communication links and the

supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

63. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 3 communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 1.8 decibels.

64. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 1.8 decibels.

65. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 1.8 decibels.

66. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 6 communication links and the

supplemental channel comprises at least 2 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 1.8 decibels.

67. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 3 communication links and the supplemental channel comprises at least 3 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

68. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 3 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

69. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 3 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

70. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 6 communication links and the

supplemental channel comprises at least 3 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

71. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 4 communication links and the supplemental channel comprises at least 4 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

72. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 5 communication links and the supplemental channel comprises at least 4 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

73. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 4 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

74. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 5 communication links and the

supplemental channel comprises at least 5 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

75. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 5 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

76. The method in claim 52, wherein the step of determining the base $\Delta E_b/N_0$ value, the fundamental channel comprises at least 6 communication links and the supplemental channel comprises at least 6 communication links; and wherein the step of adjusting the second power level by the active leg value comprises adjusting the second power level approximately 0.0 decibels.

77. The method in claim 50, wherein the adjustment of the base $\Delta E_b/N_0$ value by a frame error correction value is a function of:

$$\text{Frame Error Correction Value} = \text{FER Correction Slope} * \log_{10}(FER_{SCH}/FER_{FCH})$$

wherein the FER Correction Slope is a factor to be applied to the ratio of a supplemental frame error rate to a fundamental frame error rate converted to decibels; and

wherein the term $\log_{10}(FER_{SCH}/FER_{FCH})$ is the ratio of the supplemental frame error rate to the fundamental frame error rate.

78. The method in claim 77, wherein the FER Correction Slope is approximately -3.3.

79. The method in claim 50, further comprising adjusting the base $\Delta E_b/N_0$ value by an error code correction adjustment at least partially offsetting a gain required for a frame error correction method designed into the wireless communications system.

80. The method in claim 79, wherein the frame error correction method comprises use of a convolutional code and wherein the frame error code correction value comprises approximately 0.0 decibels.

81. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 19.2 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.6 decibels.

82. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 38.4 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.0 decibels.

83. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 76.8 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.2 decibels.

84. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 3;

the data transfer rate comprises approximately 153.6 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.4 decibels.

85. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 19.2 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.1 decibels.

86. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 38.4 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.5 decibels.

87. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 76.8 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 0.8 decibels.

88. The method in claim 79, wherein:

the frame error code correction method comprises use of a turbo code;

the transmission of data comprises use of protocols with Radio Configuration 4;

the data transfer rate comprises approximately 153.6 kbps; and

the step of adjusting the second power level by an error code correction adjustment comprises a decrease of power by approximately 1.1 decibels.

89. The method in claim 50, further comprising adjusting the base $\Delta E_b/N_0$ value by a power control adjustment at least partially offsetting a difference in a first power control of the first data transfer rate and a second power control of the second data transfer rate.

90. The method in claim 89, wherein the first data transfer rate is the data transfer rate of a fundamental channel; wherein the second data transfer rate is the data transfer rate of a supplemental channel; and wherein the power control correction adjustment comprises approximately -1.0 dB.

91. The method in claim 50, wherein the communication links are adjusted to operate over substantially the same spread spectrum.

92. The method in claim 91, wherein the communication links transfer data in a CDMA system.

93. A method of transmitting data in a wireless communications system, the method comprising the steps of:

determining a first power level for transmitting data at a first data transfer rate;

determining an available power level for use in transmitting the data; and

transmitting the data at the requested data transfer rate if the available power level is at least the first power level.

94. The method in claim 93, wherein if the first power level exceeds the available power level, the method further comprising the steps of:

determining a second data transfer rate for transmitting the data;

determining a second power level for transmitting the data at the second data transfer rate, wherein the second data transfer rate is such that the available power level is at least the second power level; and

transmitting the data the second data transfer rate.

95. The method in claim 93, wherein the available power level is a total amount of power available less an overhead reserve less a currently used power level.

96. The method in claim 93, wherein the overhead reserve is about 25% of the total available power.

97. The method in claim 93, wherein the total amount of power is between about 12 and 18 Watts.